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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,448	09/16/2003	Georg Muller	BGJ-102	1586
44590	7590	02/10/2006	EXAMINER	
ARENDT & ASSOCIATES INTELLECTUAL PROPERTY GROUP 1740 MASSACHUSETTS AVENUE BOXBOROUGH, MA 01719-2209			CHAN, EMILY Y	
			ART UNIT	PAPER NUMBER
			2829	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,448	MULLER, GEORG	
	Examiner	Art Unit	
	Emily Y. Chan	2829	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4 is/are allowed.
- 6) ☒ Claim(s) 1 and 5-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the recited different setting of transistors contained in the pull-up and pull-down circuits respectively in claim 7 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 5-6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rosefield et al US Patent No. 6,541,996 in view of Levin et al US Patent No. 6,751,782.

With respect to claims 1, 5-6, 8 and 10, Rosefield et al ('996) expressly disclose a method (see Figs 1-4) for measuring and trimming the impedance of driver devices (102, IMPEDANCE MEASUREMENT) during a test (see Fig. 2, pull up test EN and pull down test Ek) being carried out before the regular operation of the semiconductor device (chip), the driver devices (102) of the semiconductor device including each a pull up circuit (204, pull up impedance matching array) and a pull down circuit (206, pull down impedance matching array) (Col. 2, lines, 54-65 "on-chip programmable pull up impedance matching array and pull down impedance matching array), the method comprising :

activating of both the pull-up circuit (see Fig. 3, step 301 "enable pull up impeded array) and the pull-down circuit (see Fig. 3, step 308 "enable pull down impeded array),

determining a voltage dropping over the pull-up and/or pull-down circuit (see Col. 3, lines 59-60 "voltage drop"),

determining a total impedance of the pull-up and pull-down circuits (see Fig. 1, 102 "impedance measurement buffer" and Col. 9, lines 21-22 and 27-29).

Rosefield et al ('996) do not disclose that their both pull-up and pull-down circuits are activated substantially simultaneously and do not disclose the step of determining a first current flowing through the pull-up circuit or the pull-down circuit respectively.

Levin et al ('782) disclose a method and apparatus for analog compensation of driver output signal slew rate against device impedance variation (see Figs. 5-6) comprising a pull up circuit (410, pull-up devices) and pull down circuit (420, pull-down devices). Levin et al ('782) exclusively teach the step of simultaneously activating both the pull-up circuit (410) and pull-down circuit (420) (see Col. 6, lines 55-56 "pull-down devices 420 will generally be turned off and simultaneously, one or more of the pull-up devices 410 may be turned on"). Furthermore, Levin et al ('782) disclose the step of determining a first current (490, 494) flowing through the pull-up circuit (410) or the pull-down circuit (420) respectively.

Therefore, It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to incorporate the feature of simultaneously activating both the pull-up and pull-down circuits as taught by Levin et al ('782) into Rosefield et al ('996)'s method for the purpose of providing analog compensation of a driver output signal slew rate against device impedance variation as disclosed by Levin et al ('782) (see Abstract).

With respect to claim 11, Rosefield et al (6996) disclose that a test device (comparator 209) is a test device not used for the driving of output signals during the regular operation of the semiconductor device and is for selecting the driver setting for

at least one other semiconductor device (chip) during the test carried out before the regular operation of the at least one other semiconductor device (chip).

With respect to claim 12, Rosefield et al ('996) disclose that the test device (comparator 209) is connected with a device (208) provided on the semiconductor device (chip) itself, by means of which a voltage dropping over the pull-up and/or pull-down circuit is determined.

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rosefield et al ('996) in view of Levin et al ('782) as applied to claim 1 above, and further in view of Kwon et al US Patent No. 6,115,298.

Rosefield et al ('996) in view of Levin et al ('782) do not disclose that one or several of the method steps are performed several times in sequence, each with different settings of transistors contained in the pull-up or pull-down circuits, respectively.

Kwon et al ('298) disclose a semiconductor device with automatic impedance adjustment circuit (see Figs. 3-4) comprising a first transistor array 107 and a second transistor array 108. Kwon et al ('298) exclusively teach that one or several of the method steps are performed several times in sequence, each with different settings of transistors contained in the pull-up or pull-down circuits, respectively (see Col. 6, lines 6-13).

Therefore, It would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to incorporate the teaching of Kwon et al ('298) into Rosefield et al ('996) in view of Levin et al ('782) 's method for the purpose of

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providing an impedance adjustment circuit for matching the impedance of the data driver circuit with signal line impedance of the bus as disclosed by Kwon et al ('298) (see Col. 1, lines 61-64).

Allowable Subject Matter

4. Claims 2-4 are allowed over the prior art.

The following is a statement of reasons for the indication of allowable subject matter:

Claim 2 is indicated allowable because the prior art in the record does teach or suggest the steps of joint de-activating both the pull-up circuit and the pull-down circuit; and determining a standby current flowing between the supply voltage pad and the ground connection with jointly de-activated pull-up and pull down circuits. Claims 3-4 are dependent on claim 2 and are indicated allowable accordingly.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emily Y. Chan whose telephone number is 571-272-1956. The examiner can normally be reached on 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

EC
2/2/06


VINH NGUYEN
PRIMARY EXAMINER
A.U. 2829
02/03/06